Claims

1.   In a moving picture coding system using multiple reference picture, a method for setting a reference index
when an interlaced moving picture is coded into a frame picture having frame/field macroblock, comprising:
(a) determining reference picture index of frame unit at a picture (or slice) level; and
(b) determining reference picture index according to a coding mode of the macroblock on the basis of the reference picture index of frame unit at a macroblock level.

2.   The method according to claim 1, wherein in the step (a), all reference pictures are considered in unit of frame.

3.   The method according to claim 1, wherein in the step (a), reference picture index for P frame is determined by sorting the reference frames in an order reverse to a coding order and allocating index values to the sorted reference frames while sequentially visiting the sorted reference frames.

4.   The method according to claim 1, wherein in the step (a), reference picture index for B frame is determined based on a display order of the reference frame.

5.   The method according to claim 1, wherein in the step (a), in case of a reference frame list 0 for B frame, indexes are allocated in a reverse order to reference frames whose display orders are lower than the B frame and the remaining indexes are allocated in a display order to reference frames whose display orders are higher than the B frame; and
in case of a reference frame list 1 for B frame, indexes are allocated in the display order to reference

frames whose display orders are higher than the B frame and
the remaining indexes are allocated in the reverse order to
reference frames whose display orders are lower than the B
frame.

6.   The method according to claim 1, wherein in the
step (b), the reference picture index is determined according
to the coding mode of the macroblock while coding macroblock
pair with respect to the reference picture index of frame
unit.

7.   The method according to claim 1, wherein in the
step (b), the frame macroblocks use the reference picture
indexes of frame unit.

8.   The method according to claim 1, wherein in the
step (b), the reference frame stored in a reference buffer is
configured with field pair having parities opposite to each
other.

9.   The method according to claim 1, wherein in the
step (b), regardless of top and bottom field macroblocks of a
current field macroblock, a lower index is allocated to the
top reference field and a higher index is allocated to the
bottom reference field while sequentially visiting the
reference frames in an order of the reference picture
indexes, the top and bottom reference field indexes being
given by an equation:
       top reference field index = 2 × picture index of
reference frame; and
       bottom reference field index = 2 × picture index of
reference frame + 1.

10.   The method according to claim 1, wherein in the
step (b), regardless of top and bottom field macroblocks of a
current field macroblock, a lower index is allocated to the

bottom reference field and a higher index is allocated to the top reference field while sequentially visiting the reference frames in an order of the reference picture indexes, the top and bottom reference field indexes being given by an equation:

top reference field index = 2 × picture index of reference frame + 1; and

bottom reference field index = 2 × picture index of reference frame

11.   The method according to claim 1, wherein in the step (b), indexes that are increased by one are alternately allocated to reference fields, starting from the reference field having a parity equal to the current field to the reference field having a parity different from the current field, while sequentially visiting the reference frames according to a reference picture index order of the picture (or slice) level.

12.   The method according to claim 1, wherein in the step (b), regardless of the top and bottom field macroblocks of a current field macroblock, a lower index is allocated to reference field close to the current field in view of time and a higher index is allocated to reference field far from the current field in view of time while sequentially visiting the reference frames in an order of the reference picture indexes, the reference field indexes being given by an equation:

reference field index close to the current field = 2 × picture index of reference frame; and

reference field index far from the current field = 2 × picture index of reference frame + 1.

13.   In a moving picture coding system using multiple reference picture, a method for coding an interlaced moving picture into a frame picture having frame/field macroblock,

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wherein a reference picture index of the frame macroblock is determined at a macroblock level by determining the reference picture index of frame unit at a picture (or slice) level and the reference picture index of frame unit is used.

14.   In a moving picture coding system using multiple reference picture, a method for coding an interlaced moving picture into a frame picture having frame/field macroblock, wherein a reference picture index of the frame macroblock is determined at a macroblock level by determining the reference picture index of frame unit at a picture (or slice) level and respectively allocating a lower index and a higher index to a top reference field and a bottom reference field while sequentially visiting the reference frames according to an order of reference picture index of frame unit, the top and bottom field indexes being giving by an equation:

top reference field index = 2 × picture index of reference frame; and

bottom reference field index = 2 × picture index of reference frame + 1.

15.   In a moving picture coding system using multiple reference picture, a method for coding an interlaced moving picture into a frame picture having frame/field macroblock, wherein a reference picture index of the frame macroblock is determined at a macroblock level by determining the reference picture index of frame unit at a picture (or slice) level and respectively allocating a lower index and a higher index to a bottom reference field and a top reference field while sequentially visiting the reference frames according to an order of reference picture index of frame unit, the top and bottom reference field indexes being given by an equation:

top reference field index = 2 × picture index of reference frame + 1; and

bottom reference field index = 2 × picture index of reference frame.

16.   In a moving picture coding system using multiple reference picture, a method for coding an interlaced moving picture into a frame picture having frame/field macroblock,
5   wherein a reference picture index of the frame macroblock is determined at a macroblock level by determining the reference picture index of frame unit at a picture (or slice) level and alternately allocating indexes, which are increased by one, to reference fields, starting from a reference field having
10   parity equal to a current field to reference field having parity different from the current field while sequentially visiting the reference frames according to an order of reference picture index of frame unit in the field macroblock.

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17.   In a moving picture coding system using multiple reference picture, a method for coding an interlaced moving picture into a frame picture having frame/field macroblock, wherein a reference picture index of the frame macroblock is
20   determined at a macroblock level by determining the reference picture index of frame unit at a picture (or slice) level allocating a lower index to a reference field close to a current field in view of time and allocating higher index to a reference field far from the current field in view of time
25   while sequentially visiting the reference frames according to an order of reference picture index of frame unit, the indexes of the reference fields being given by an equation:
      index of the reference field close to the current field
      = 2 × picture index of reference frame; and
30   index of the reference field far from the current field
      = 2 × picture index of reference frame + 1.